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ENVIRONMENTAL CONSIDERATIONS FOR THE PLANNING AND CONSTRUCTION OF PROVINCIAL SEWER AND WATER PROJECTS

February 1977

The Honourable
George A. Kerr, Q.C.,
Minister

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Deputy Minister

Ministry
of the
Environment
Ontario

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ENVIRONMENTAL CONSIDERATIONS FOR THE PLANNING AND CONSTRUCTION OF PROVINCIAL SEWER AND WATER PROJECTS

First Edition

February 1977

ENVIRONMENTAL ASSESSMENT SECTION
ENVIRONMENTAL APPROVALS BRANCH

MINISTRY
OF THE
ENVIRONMENT

PREAMBLE

A number of projects were exempted from The Environmental Assessment Act (1975) through Section 30. This allows for the exemption of any projects that have advanced to a stage of planning where the preparation of an environmental assessment would cause undue delay and expense.

The conditions of MOE Exemption No.5 are:

1. The Environmental Assessment Section of the Environmental Approvals Branch be involved at all stages of the planning of any contract that could have environmental implications;
2. The construction of works be carried out in accordance with the construction and site restoration guidelines set out by the Environmental Assessment Section;
3. The construction of that part of the undertaking consisting of sewers be carried out in accordance with the construction and site restoration guidelines as set out in "The Standard Documents for the Construction of Sewers" and as set out in the contract plans; and
4. That guidelines similar to "The Standard Documents for the Construction of Sewers" be prepared for watermains and followed, and that in the meantime, "The Standard Documents for the Construction of Sewers" be followed with the necessary changes in the construction of that part of the undertaking consisting of watermains.

The intent of this report is to assist and facilitate consultants and project personnel in the planning, designing and constructing of Provincial sewer and water projects in a manner consistant with the conditions of the exemption.

The Environmental Assessment Section reviewed the "Standard Documents for the Construction of Sewers and Watermains". This guideline is an expansion of the construction and site restoration sections of those standard documents.

Where possible, the plans and specifications for Provincial sewer and water projects will reflect the concerns in this document.

This document is a general guide and some of the items may have to be expanded upon or changed for specific projects. Guidance for such changes will come from the Project Coordination Branch in consultation with the Environmental Assessment Section.

Our aim is to cause more environmentally sound planning and construction techniques to be carried out, through the use of this guide.

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ENVIRONMENTAL CONSIDERATIONS FOR THE CONSTRUCTION OF PROVINCIAL SEWER AND WATER PROJECTS

A. EQUIPMENT FUELLING, MAINTENANCE AND STORAGE

1. Where?

a) Equipment fuelling and maintenance shall be done in such a manner that no fuel or oil can gain access to surface water or groundwater.

2. Cleanup of Spills:

a) There shall be a plan and the means available for the interception and rapid clean-up and disposal of spillages (land and/or water) that do occur. Any spills causing impairment to the natural environment must be reported to the local MOE District office immediately. (See Appendix I & O.W.R. Act)

3. Cleaning Equipment and Disposal of Construction Debris:

a) The cleaning of equipment in streams and lakes and the emptying of fuel, lubricants and pesticides into watercourses is prohibited. All construction debris must be contained and disposed of in an approved location.

b) Construction equipment shall be cleaned prior to entering public roadways.

c) Construction equipment shall not be cleaned where the debris can gain access to storm sewers or watercourses.

4. Equipment and Material Storage:

a) All equipment and materials shall be stored in an orderly manner and in locations acceptable to the Ministry.

5. Exhaust:

a) Exhaust emissions from equipment should be minimized through efficient machine maintenance.

B. WATERCOURSE CROSSINGS

1. Preparation for Crossings:

a) Before any construction at a crossing begins, all equipment and backfilling material to be used must be on site and ready for placement. The time from excavation to restoration shall be kept to a minimum.

b) The nearest District Offices of MNR and MOE and the local Conservation Authority shall be notified two working days prior to the commencement of any crossings.

2. Vegetation Removal:

a) The removal of vegetation from the slope approaches to the watercourse shall be kept to the minimum necessary for construction.

b) Aquatic weeds uprooted or cut prior to or during trenching operations must be contained and adequately disposed of on land in a manner and location acceptable to the Ministry.

3. Culvert Installation for Temporary Stream Crossings:

a) Culvert installations should be made on existing natural grade with minimum possible disturbance to the channel and the culvert should project well beyond the fill area.

b) The inlet and outlet of the culvert shall be protected against erosion.

c) The design features of all culverts shall ensure that there is no scouring of the streambed or banks.

d) The culvert shall not restrict peak flow.

e) The culvert shall not restrict the movement of migrating fish.

f) When no longer required the crossing shall be removed and the site restored to its original condition.

4. Diversion Channel:

a) If a diversion channel is required, it shall be suitably stabilized before the stream is diverted.

b) The diversion (including slope protection) must be completed before the stream is diverted. Only then may the original channel be blocked off.

5. Excavation:

a) Unless the excavated material from the bed of the watercourse is suitable for backfilling the trench, it should be removed and deposited on land where it will not regain access to watercourses. Disposal shall be at a site, approved by the engineer.

b) Work in the stream will be scheduled to avoid fish migration, spawning or egg incubation periods.

c) No pre-trenching shall be undertaken.

6. Backfilling:

a) Clean, approved, granular material must be available on site prior to trenching and must be used to cover the pipe as soon as it is laid across the watercourse.

b) Cut-off walls shall be used to avoid the creation of an artificial drain effect in the trench (french drain).

7. Stabilization:

a) The streambanks and bed that have been disturbed by construction must be stabilized immediately after construction to prevent erosion.

8. Vehicular Movement:

a) The number of points at which heavy equipment may cross the river will be restricted and at no time shall the streambed be used as a vehicle or equipment route.

9. Site Grading and Drainage:

a) Action must be taken to ensure that the trench adjacent to the crossing is not flooded with surface runoff that would result in a discharge of turbid water to the watercourse.

C. AGRICULTURAL LAND

1. Notice to Owner:

a) Adequate notice of the schedule (timing and location) of the movement of materials and construction activities and normal maintenance and repairs should be given to the landowner and occupant.

b) The use of herbicides and pesticides must be co-ordinated with the Regional Pesticides Control Office and the landowner and occupant.

2. Field Tiles and Agricultural Drains:

a) It is essential to repair and/or replace tile drainage systems to their original condition. All open drains and ditches must be properly repaired utilizing appropriate soil stabilization procedures.

b) Tile drains that are cut during the trenching operation shall be maintained to prevent the entrance of debris and silt into the drainage system, and to accommodate the free flow of water through the system.

3. Topsoil Removal:

a) Topsoil must be stripped and stockpiled separately before trenching begins. Excess excavated material, stones, construction debris, trees, and brush must be disposed of in a manner acceptable to the landowner and the Ministry of the Environment.

4. Compaction of Topsoil:

   a) Compaction shall be minimized and where compaction of topsoil does occur, it will be necessary to relieve this compaction before leaving the site.

5. Topsoil Replacement:

   a) Topsoil must be replaced last and revegetated in a manner compatible with the soils and existing land uses.

6. Access Across Trench:

   a) Where requested, an access route must be available to the landowner to cross the right-of-way and easement or temporary work area during all phases of construction so as not to inhibit normal movement of equipment or animals.

   b) Care must be taken to protect livestock from being injured by any phase of construction.

7. Fences:

   a) It is necessary to repair or replace fences that are opened, removed or damaged, to their previous condition unless otherwise specified.

   b) Where the cutting of wire fences is necessary, it shall be done in such a manner as to prevent loss of tension on the remaining fence sections.

D. NOISE CONTROL

1. Noise By-Laws:

a) All local noise by-laws must be recognized and adhered to.

2. Mufflers:

a) All vehicles and equipment shall be equipped with efficient muffling devices to minimize noise levels in the project area.

3. Noise Attenuation:

a) Where necessary, noise attenuating devices (barriers) shall be placed around stationary pumps and compressors.

E. DUST AND PARTICULATE CONTROL

a) Dust control measures shall be undertaken to prevent dust nuisances resulting from any phase of the construction operation.

b) Permitted dust control measures may include the application of calcium chloride, oil or water. In general, the use of calcium chloride and oil shall be minimized and restricted to vehicle rights-of-way. In close proximity to watercourses, more frequent water applications shall be used.

F. CLEARING RIGHTS-OF-WAY

1. Vegetation Removal:

a) Grubbing shall not be carried out prematurely but shall only be done in advance of the immediate construction phase.

b) Prior to clearing any vegetation adjacent to or within the construction site, trees that are to be saved shall be marked for protection and fenced around the dripline, or as directed by the engineer.

2. Soil Storage:

a) Topsoil shall be stripped from the area to be disturbed by the construction operation and shall be stockpiled so that it may be replaced following construction. It is important to keep the topsoil separated from the subsoil.

b) Stockpiled material must be located away from watercourses.

c) Stockpiled material must be stabilized to prevent erosion.

d) Any excavated material that is not used as backfill shall be disposed of in an approved manner. At no time shall excess fill be deposited in floodplain areas, watercourses, or around the base of trees.

G. SITE DRAINAGE AND EROSION CONTROL

1. Drainage to Pipe Trenches:

a) Site grading or other measures shall be taken to prevent runoff water from draining into the pipe trench.

2. Use of Vegetation Strips:

a) Vegetation strips shall be maintained between the construction easement and watercourses.

3. Containment of Surface Runoff:

a) Provisions shall be made to intercept and divert site drainage, at short distance intervals, into natural channels, infiltration ditches, settling ponds or permeable ground cover depending on quality and quantity of runoff.

b) Appropriate sediment retention measures shall be incorporated in the work to ensure that sediment discharge to watercourses in or adjacent to the working area is minimized.

H. WORKING AREA DELINEATION

a) The boundaries of the working area shall be delineated through the use of stakes or snow fencing.

b) Snow fencing shall be placed between the construction easement and watercourses, marshes, trees and shrubs that are to be protected.

I. DEWATERING

a) Prior to any dewatering, a water level survey of the closest wells should be conducted. If the amount of dewatering is equal to or exceeds 10,000 gpd (i.e., 20 gpm for eight hours) a Water Taking Permit must be obtained from the Regional Water Resources Section of the Ministry of the Environment.

b) All water from dewatering operations is to be discharged to settling ponds unless otherwise specified by this Ministry.

J. GROUNDWATER AND WELLS

a) A water level survey of wells in the vicinity of the trenching operations should be carried out prior to construction.

b) A plan for compensation (i.e., immediate delivery of water) shall be worked out ahead of time in order to minimize the delay should it be necessary to provide water for a landowner.

c) Landowners whose wells are affected by construction practices (i.e., dewatering operations and/or the release of ground water) shall be compensated accordingly. Landowners experiencing temporary interference shall have water made available to them until ground water conditions return to normal. Landowners experiencing permanent interference shall have their water supply restored in a suitable manner (i.e., new well or deep well pump or extension of a municipal service). If well interference occurs in a water service area, only temporary provisions of water supplies would be required. Permanent restoration would be the landowners responsibility.

K. TREE MAINTENANCE

1. Protection:

a) All trees that are to be retained must have snow fencing placed around the dripline of the tree. The snow fencing must not be placed against the trunk of the tree.

b) No heavy machinery is to pass inside of the dripline of trees that are to be saved.

2. Removal of Limbs:

a) Any limbs that are removed shall be sawed off flush to the trunk and painted with a dressing approved by the engineer.

3. Repair of Damage:

a) Any scars caused by machinery shall be repaired and painted with an approved dressing.

4. Stockpiled Material:

a) Any material placed around the base of trees shall be removed immediately by hand.

5. Removal of Dead Trees and Slash:

a) Any shrubs or trees killed by the construction operation shall be removed from the construction site, and disposed of in a location approved by the engineer.

L. SITE RESTORATION

1. Restoration Plan:

a) A restoration plan will be established prior to initiation of construction.

2. Timing:

a) Restoration should follow immediately behind construction.

b) If the weather does not permit full restoration, then interim stabilization will be carried out until such time as restoration is possible.

3. Final Grade and Compaction:

a) Final grades should be close to what the initial grades were prior to construction unless otherwise specified.

b) Proper compaction of backfill must be achieved to prevent settling.

4. Seeding and Re-entering the Area:

a) At no time should machinery re-enter an area other than a roadway after restoration has been carried out, unless further restoration is done.

5. Temporary Roads:

   a) Temporary roads shall be removed and restored as soon as construction activities will permit.

APPENDIX I

Telephone Numbers of MOE Regional and District Offices

Northwestern Region

Thunder Bay District Office	475-1205
Kenora District Office	468-5578

Northeastern Region

Sudbury District Office	522-8282
Timmins District Office	264-9474
Sault Ste Marie District Office	949-4640
North Bay District Office	476-1001
Parry Sound District Office	746-2139

Southwestern Region

London Regional Office	681-3600
Windsor District Office	945-2339
Sarnia District Office	336-4030
Owen Sound District Office	371-2901
Chatham Sub-District Office	352-5107
Clinton-District Pesticides Ofcr.	482-3428

West-Central Region

Hamilton Regional Office	561-7410
Cambridge District Office	623-2080
Welland District Office	735-0431
Simcoe Sub-Office - Pesticides Ofcr.	426-1940

Central Region

Barrie District Office	762-1730
Muskoka-Haliburton District Office (Gravenhurst)	687-3408
Peterborough District Office	743-2972
Toronto District Office	424-3000
Halton-Peel District Office (Oakville)	822-2566
Huntsville Sub-Office	789-2386

Southeastern Region

Kingston Regional Office	549-4000
Ottawa District Office	521-3450
Cornwall District Office	933-7402
Belleville District Office	962-9208
Pembroke District Office	732-3643

APPENDIX II

DETAILS TO BE SHOWN ON ALL CONTRACT DRAWINGS PREPARED FOR MINISTRY OF THE ENVIRONMENT PROJECTS

The details which should be shown on all contract drawings are:

1. Surface contours at intervals not greater than 5 feet or 2 meters (where possible).
2. All existing watercourses (permanent and intermittent) as well as major surface drainage courses.
3. All trees and shrubs existing within, as well as immediately outside, of the working area. The consultant should indicate the vegetation that is to be removed, as well as that which is to be saved, so that there will be no confusion in the field.
4. Restoration procedures. For example, details as to areas that are to be hydro-seeded, sodded, sodded and staked, rip-rapped, lined with Gabion baskets, etc.
5. All existing facilities.
6. The alignment of the sewer or watermain as well as boundaries of permanent and temporary easements.
7. Location of snow-fencing to be placed along the boundaries of the temporary easement as well as around vegetation to be protected.
8. Location of existing buildings, wells, roadways, etc.
9. Location of existing recreation areas likely to be affected by the construction activity.
10. All other items that the consultant might feel is pertinent to evaluating the project.

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Environmental considerations for
the planning and construction of
provincial sewer and water
projects.

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